

COLMAN'S RURAL WORLD.

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SOIL INOCULATION FOR ALFALFA.

Alfalfa is often wholly condemned by those for whom it fails to thrive in certain localities. The Illinois Experiment Station has made some exhaustive and interesting investigations with alfalfa on Illinois soil, where, generally speaking, this plant has not succeeded. It was found that while the seed germinated and the plant made a good growth for a year or two, it frequently weakened after two or three years, and seemed ready to die. It was found on investigation that in all such cases the plants presented the same appearance which plants show with an insufficient supply of nitrogen, and that in none of these fields could there be found any tubercles or nodules upon the roots of the alfalfa, and further that liberal applications of barnyard manure produced vigorous and healthy growth. A series of experiments was begun about a year ago in order to investigate the question, comprehending the application of various elements of fertility, both singly and in combinations, and both with and without the inoculation of the soil with the alfalfa bacteria; that is, with the bacteria which are known to live upon the alfalfa root in sections of the country where this valuable plant thrives.

Lime, nitrogen, phosphorus and potassium were applied in various combinations, both with and without bacterial inoculation. Space does not permit a detailed report of results, but some of the most pronounced are worthy of notice. Two facts are shown very distinctly: first, that the addition of nitrogen to the soil greatly increases the growth of alfalfa, and secondly, that the inoculation of the soil with the proper bacteria produces a similar effect, which indicates that the presence of bacteria enables the plant to secure a supply of nitrogen from the air. The value of this nitrogen fixing habit of leguminous plants is appreciated when it is known that nitrogen costs about 15 cents a pound in commercial fertilizers and about 50 pounds of nitrogen are required to produce one bushel of alfalfa hay, and the weight of the free nitrogen in the atmosphere is equal to about 12 pounds for each square inch of the surface of the earth.

On our soil, limestone soils the addition of lime is advantageous to alfalfa and profitable to the farmer. Acidity is unfriendly to bacterial development. Phosphorus is frequently helpful on some types of soils. The inoculation of soil is made by the application of a hundred pounds or so to the acre of infected soil taken from an old alfalfa field.

It is a fully established scientific fact that leguminous plants, as the clovers, peas, beans, vetches, alfalfa, etc., have the power to gather or accumulate free nitrogen from the atmosphere by microscopic organisms called bacteria, which live in little nodules or tubercles upon the roots of the legumes, and further, that for different species of leguminous plants there are also different species of "nitrogen gathering" bacteria.

The latest addition to the science of nitrogen gathering is the now well established fact that legumes do not possess this power inherently as an invariable biological faculty, but that it is an acquired habit. In one sense the presence of bacteria may be considered as a morbid condition, the parasites not being an enemy to the plant which support them, as is so often the case with the many friendly forms of bacterial life found in the human body assisting in the processes of digestion and assimilation, but not only work for nothing and board themselves, but even pay for the privilege. Before alfalfa is declared a failure on any soil an inquiry should be made into the matter of soil condition, and if found sterile, an experimental inoculation on a small plot would determine whether the soil was susceptible of improvement.

The results of these experiments during succeeding years will constitute a decided contribution to the history of this valuable plant, and all interested will watch its development as one of our staple crops.

THOROUGHNESS.

In his Horticultural Talks this week Mr. Edwin H. Richel delivers some good gospel on the text "Thoroughness." How often does the manner in which a thing is done make all the difference between success and failure. Thoroughness means "thoroughness," and the thorough farmer goes clear through to the other side of a proposition. The slovenly and indolent farmer only goes half way through and gets tired or disgusted; then, because failure is his reward, he thinks he has no "luck," and takes refuge in being "unfortunate."

Thoroughness is such an old text that it seems trite and hackneyed to repeat "If a thing is worth doing at all, it is worth doing well." "Whatever thy hand findeth to do, do it with all thy might," and so on. However, the excuse for pounding away on a subject is the still evident need for it, and there are yet too many farmers who undertake so much that thorough attention cannot be given to any one branch of effort.

The real reason why intensive farming pays is that by taking less ground and working it for all it is worth the job is apt to be thorough. Specialization, which often succeeds where scatteration fails, really means nothing more nor less than doing one thing so well that it can't help amounting to something in the end. By specialization we do not mean devoting a lifetime to one crop. A diversity of crops, both as a safeguard against weather vagaries and as an intelligent system of rotation, is absolutely essential for the agronomist.

The qualifications for thoroughness are a combination of Davy Crockett's "First be sure you are right, then go ahead," coupled with a bulldog persistence that knows no such thing as discouragement. In the preparation of soil for planting in the cultivation of the crop, in fighting insect and weed enemies, in taking care of the product when gathered, in finding the best-paying market and preparing for it, the butter, apples, fat cattle, honey, eggs—nothing counts less thoroughness, which means doing it the best you can.

SAVE THE MANURE.

Every farmer has some stock. Many could carry more if they would. It is pretty well settled that the manure value alone often lies the profit of stock feeding, and this is urged as an inducement to feed hay and grain rather than sell it.

Barnyard manure is a perfect fertilizer. It not only contains all of the elements necessary for plant growth, but they are in such a form that the soil can assimilate them. It is the same amount of phosphate, lime, potash and nitrogen in a given quantity of stable manure is worth more than the same quantity in commercial fertilizers.

Barnyard manure containing straw or other roughage, which is usually the case, has the additional advantage of improving the mechanical condition of the soil by adding humus or decaying vegetable matter. Humus makes soil porous and light and lowers the capillarity of the soil. This of this character is a natural fertilizer, and its use in evaporation takes place slowly.

In the east a "phosphate sack" is as common a sight as a grain bag in the west. This means that eastern farmers are compelled to depend on some form of commercial fertilizer for the maintenance of soil fertility on their farms. Prof. Sanborn tells in his article in this issue how he adopted a worn-out New Hampshire farm and brought it up to a profitable fertility. It was a struggle with adverse conditions and only intelligence and perseverance accomplished the end desired.

Commercial fertilizer, which is expensive, is little known in the west, and a proper conservation of manure will tend to keep it unknown. Now that the rush of work is over, the farmer will do well to turn his attention to old jobs about the place. Fences need repairing, the old barn needs a kind of weather; preparations can be made for winter housing of stock; repairs and general chores, building, planning for the next year's work, etc., should now be given attention. Of all this fall work the hauling and scattering of manure is one of the most important items. The summer's accumulation, if any, should be put on the fields where it will do the most good. A manure spreader is a good implement, but in its absence manure should be broken up as finely as possible and scattered, not dumped in piles. The manure pile has been called the poor man's bank, but it can be made the rich man's bank. It is stated on good authority that if one-tenth of the barnyard manure now allowed to waste by leaching, overheating and running away to places where it does no good, were saved and wisely applied, it would equal in value the total amount of commercial fertilizer sold.

A MISSOURIAN IN TEXAS.

Editor RURAL WORLD: The great, breezy "Lone Star State" fills my thoughts to the exclusion of New England, with its trim houses, orderly barns and patch-work farming; vanished also are the cozy substantial homes of the Pennsylvania "Dutchmen," the living embodiment of intelligent, successful farming. The connecting link of the week's trip—the bountiful corn fields of Indiana and Ohio, are also a shady memory.

I had hardly left St. Louis twenty miles behind on the flying "Frisco Meteor," when I observed a farmer on the Meramec river bottom lands, as a result of his own indolence, mowing a magnificent crop of weeds after he had shocked his corn, preparatory to plowing for wheat. "Dear, thrifty, old Missouri!" Fortunately, land in the Ozark portion of Missouri is scarce that can grow an 8-bushel crop of corn, and harvest on top of that a ton and half of weeds to the acre, and my "amour propre" was not again jarred in that direction. The sun went down on the shining red apples of the Ozark orchards and arose on the cotton fields of the Indian Territory, east of Sapulpa.

To the ordinary observer, agricultural conditions at this point would appear in the extreme, but to the writer who has been over this district on horseback, when not a foot of land was under the plow, the ride from that point to Dennison, the old northern gateway of Texas, was pleasant and enjoyable. All the evidences of a healthy pioneer agricultural district were there, where the prairie and the cowboy used to rule supreme. Thrifty crops of cotton, apparently from half to three-quarters of a bale to the acre, were being picked. Every way station had its gin, and cotton, at this season, at least, was apparently king, although the dried stalks of a harvested corn crop and the tall weeds on the wheat stubble fields indicated earlier crops, but gave no clue to the success which had attended their cultivation. On long stretches of country the cattle still held the fort, and all of these were apparently in fleshy growing condition, and not suffering from the transformation of conditions being effected in their midst.

I was sitting at breakfast in the dining car as the train crossed the Canadian river, and the kaleidoscope scenes that flashed on my vision recalled memories of twenty years ago on the Santa Fe railroad and Kansas Pacific railroad in Kansas, and the Union Pacific railroad in Nebraska, east of the hundredth meridian, and reflecting on what will this district be twenty years hence. Conditions are different now from what they were then. Improved machinery and well graded stock are visible on every hand. Transportation facilities are convenient everywhere. The science and knowledge of agriculture has advanced by leaps and bounds during the past twenty years, and the next ten ought to make the change that previously took twenty, but with all that, pioneering in any business is hard and laborious, and does not always repay the toll and the worry which necessarily accompany it. Pioneers do a great work, but it is for future generations, and they are worthy of all praise and encouragement in their noble work. This district is naturally rich and productive and has a great future before it. It has already reached the stage where this is assured.

The Venetian-brown waters and mud of the Red river and the flourishing city of Dennison, Texas, are behind us, and we are speeding towards Sherman over the famous prairies of North Central Texas. At first it is all rich grazing lands in large pastures, with well graded cattle, looking in the pink of condition, but these rapidly give way to extensive cotton fields and large expanses of the black, waxy soil being prepared for wheat. Every way station has its cotton gin and tiers of cotton bales awaiting shipment. Yet there are thousands of acres of this marvellously fertile soil still lying unproductive. The work of the New England farmer scratching a few inches of unproductive soil, and this going to waste. This is a great country, with great possibilities, if its people only knew it. Along through this section to Sherman and beyond the cotton crop in course of picking looks well—extending to three-quarters of a bale, some better. Corn has, I heard, been poor on account of drought. Towards Fort Worth the light, gravelly soils are again devoted to grass, and both pastures and cattle look well. Two mammoth packing plants at the Fort Worth stock yards are approaching completion, one owned by the Swift and the other by the Armour Company. These will be open in the next sixty days, and will give quite an impetus to the fattening of hogs and cattle in this state.

Two days ago I was driving around among the mesa and mesquite brush of Palo Pinto county, in West Central Texas. Partly cotton, but mostly cattle farming, as the short grasses abound in that district. I met a breezy native in the evening, who owned quite a large body of land and had acquired a comfortable competency in cattle growing and farming. On reply to an inquiry as to what he fed his cattle in winter, I will repeat his remarks about his experience with "Johnson Grass." "Johnson Grass is the greatest crop on earth. Last year I cut two crops of hay, a ton an acre each time. Richest kind of feed. Afterwards grazed a steer to the acre until they were plumb fat; then plowed it up and fed my stock cattle on its roots all winter, just plowing up a little at a time. Carrots for feed are not knee high to Johnson grass roots. The beauty of it is that plowing it up and feeding it improves the soil. The next year's crop, just harrow it and smooth it down and there are plenty of roots left to make the finest kind of crop next year. You fellows up north can't beat that. Two crops of hay, good pasture, then eat the roots, and next year have a banner crop—you can't miss a crop; you could not if you tried for two years."

Now is that? The gentleman is a financial success, but whether Johnson grass was the lever I did not learn. Texas is a great state. The Beaumont oil has stopped rushing, but the natural gas remains, and with its aid a breezy Texan could hardly overstate the great future in store for this section of our commonwealth. It is too good and too large for a prolonged stay. You will hear from me next in Arkansas.

THOMAS LAWSON.

Fort Worth, Texas.

Editor RURAL WORLD: Have just read the RURAL WORLD of Sept. 17th and cannot refrain from commenting on its most excellent bit of fare. From my viewpoint I cannot figure out how any family interested in any way in rural life and agriculture or live stock in a small or larger degree, can be so close-fisted as to deny themselves the good things served in so good style for so trifling a sum as fifty cents a year. Why, with our local demand for labor, any fourteen-year-old boy can pay for a year's reading with a half day's wages.

THE RURAL WORLD is not the only paper of its kind I take, by several, but I want to say it is one of the last I should care to be deprived of.

Well, it is raining, and has been for the last twelve hours. Everything outdoors is soaked to "saturation."

Your readers may be surprised to know there are quite a good many fields of wheat, oats, and timothy yet in the shock, and you may depend the grain is now high ruined. Many things have figured in this apparently unnecessary delay in caring for the small grain. Large acreage, large yield, scarcity of laborers and frequent rains delaying the threshing machines. These who stacked first on threshing during the last ten days that much of the grain is badly sprouted in the stack. Scarcity of labor and delay in threshing has caused late plowing and preparation of land for wheat. Looks now like its safe to say Pettis county will have about 120 acres of corn laid, but with the last rain. Many have not yet begun sowing.

We began plowing early, and when the land got a little dry about the first of August we harrowed close up to the plows, keeping the soils packed closely. Our earliest plowing, on account of later rains, became settled and cold, and with weeds and grass. This we double drilled and harrowed just ahead of the drill. We bought a Superior 12 disc drill and began sowing August 30 and continued sowing when the soil was in proper condition until Sept. 10th, when we finished our stubble land. We want to sow about 120 acres of corn laid, but with the fields now mired we may have to abandon the idea, at least in part.

Some of our friends shook their heads and said you are sowing too early, but we remembered having commenced sowing wheat August 30, 1872, just 30 years ago, and we see no special cause for later sowing now than then. Damage by fly in this section is more in their eye than some farmers think. Late sown wheat has every condition against it and will fall nine times to one failure of early sown. Last year some very late and poorly sown fields, with scarcely more than one bushel per acre, made good yield, but it was by no means chargeable to the farmers' method—it was purely providential.

This year I shall have to break my record. I always put all my corn in the shock, but this time we shall not be able to do it. Labor has been at a premium all summer and fall, and so I shall have about seventy-five to ninety acres of corn to gather from the stalk. We have been cutting for three weeks, but with more or less irregularity, on account of unfavorable weather or labor conditions.

We are sowing timothy seed with all our wheat and shall follow with clover some time from February to March.

About the best way of of the annoyance of being bothered by the shiffler and never-satisfied wagoner is to seed our lands to the grasses and grasses, thereby making our farms better and avoiding contact with the nomadic, unsatisfied and thifflers.

Fall pastures could hardly be better. Live stock all kinds in prime condition. Hogs are scarce.

Those who have been gathering out a little corn for feed say he yield is going to be as the wheat yield—above early estimates. Corn was never more firm and timelier. I have seen rarer and taller stalks, but never a more evenly good yield of corn.

On the 17th and 18th last, we held our third harvest carnival. The agricultural exhibits were of a very superior quality. Corn ears 12 to 17 inches long; pumpkins up to 120 pounds; potatoes as fine as ever grown in Ireland. The horticultural display was beyond comparison with anything of its kind here before. We never saw larger nor finer fruits. We even showed horsewheels 16½ feet long.

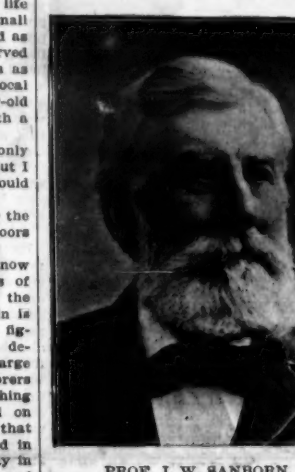
Land buyers are becoming more numerous each week. Thirst week there have been no less than twenty here looking at farms. Land handwinded during the last year from \$5 to 10 per cent. Some sales have been made an advance of 50 per cent over the price paid last year. Destroy the walls of prejudice has built about this commonwealth and real estate will be in demand and its merits will sell as high as that of any sister state.

Joining her, or separated by either the Mississippi or the Missouri rivers. Great is Missouri. Long may she prosper. Pettis Co., Mo. W. D. WADE.

RECLAIMING AN ABANDONED FARM.

Editor RURAL WORLD: Wilson Farm comprises 750 acres of home farm in a hilly township on one of its most prominent elevations, and 750 acres of pasture 12 miles away on Belknap range of mountains. Its outline is not precipitous like many New Hampshire farms, but slopes to all points of the compass on easily working outlines. It is made up of several farms whose former occupants have sought their fortunes in the West and in cities.

For 18 years I was absent at our state colleges and the place was given over to hay sales and its more reduced parts to



PROF. J. W. SANBORN.

nature that at once proceeded to cover them with bushes and forest growth. On my return to the farm, after voluntarily dropping the presidency of the Utah Agricultural College and the field of the tillage area would produce a ton of hay per acre, while much of it would require 10 acres for one ton. The whole farm, it was estimated, would yield only 112 tons. Its buildings, comprising about 400 feet in length of barn room and houses for 10 families, and two barns purchased and were mainly in an exceedingly dilapidated condition. As the farm is 15 miles from its main market, it became necessary to devote it to staple crops. So that all the conditions presented, represented New England agricultural opportunity at its worst.

But they were ancestral acres, and I, a lover of nature, of philosophy as applicable to agriculture and possessed of a desire to convert in part the farm into a semi-experimental test of the ever-prominent inquiry in New England whether farming paid, or could be made to pay, and whether science and art could be wedded as to make our New England farms profitable and agriculture inviting.

To satisfy the natural curiosity of the western farmer, I will state that the two farms purchased by me comprised 230 acres of ground and cost \$2500. Of this land about 60 acres were in mowing and tillage, 55 in woods and the rest in poor pasture, requiring five to eight acres to pasture a cow, and of old, abandoned fields gone back to bushes and young woods. About one-third of my main farm was in mowing and tillage.

A word about New England farming: The competition of the west and profits of manufacturing and commercial life of the east had reduced farming here to grass production. As this farming required a minimum of capital, labor, tillage and purchased manures, our agricultural motto was to get the most out of the least. Under this tillage land decreased and as the motto itself was the outgrowth of want of faith in farming the crops often narrowed too.

Wilson Farm is conducted on the reverse view. It assumes:

1. That farming should be both intensive and extensive or that all its area should be pressed for its best service, and that thus pressed, it will pay for services of management and current rates of interest on capital invested.

2. That the free use of capital, labor, tillage machinery and chemical fertilizers are bedrock essentials of truly successful farming.

3. That such farming necessarily involves a scientific rotation of crops, including a heavy proportion of tillage crops, that these crops should be fed according to their several wants, and that chemical fertilization should be adapted to the soil handled. Around these should cluster subsidiary operations working in harmony with the laws involved.

soils is secured by feeding five crops of eight, by annual purchase of at present of about 150 tons protein or nitrogenous foods, the use of muck, abundant on the farm, for mill bog, the minerals being added to it on our own formula, the purchase of 60 tons yearly of chemicals combined on formulas to fit the soil, by the rotation and tillage system and by irrigation—some 70 acres being now irrigated.

Pasture land that is free enough of stone for tillage, is converted into tillage and rotated with fields, 60 acres having already been taken in.

In the course of four more years there will be 400 acres of tillage area, making 50 acres for each crop of the rotation and 100 acres more of natural mowing and irrigation ground. At present there is in tillage use 40 acres of corn, 40 of oats, 20 of potatoes, 18 of Hungarian, 15 acres timothy and about 60 acres of non-tillable (without drainage) grass or mowing land. But those areas will soon go by fifties each.

The farm began, on my return from Utah eight years ago, with ability to winter 40 cows, there being no sales of hay. The coming winter there will be kept 120 cows, 14 work horses and 70 to 80 calves and heifers growing for cows. Twenty-six acres of potatoes will be sold that will yield from 150 to 200 bushels per acre, and 150 tons timothy. Hay sells for from \$14 to \$15 per ton, the potatoes \$5 to 75 cents delivered, and milk from 24 to 25 cents per can of 5½ quarts. This milk is delivered at the railroad station, four miles away, for Boston market, 85 miles distant.

The income of the farm has steadily risen from \$1,500 to \$1,800, until it is estimated it will be approximately \$25,000 this year, while the net income has gone from zero to a salary for management of \$2,000 or more, and market rates for interest on twice what the land would have sold for at the start and interest on personal property used. Gross and net income is rising rapidly annually and bids fair to stay there, to be satisfactory. In short, capitalised farming pays in this section where it is popularly reputed to be a hard business, harder than farming anywhere else. Indeed, so hard is its reputation that the farms that I purchased had buildings on them that cost more than twice the purchase price.

The plan laid out contemplates at its completion on the second round of the eight years rotation now just entered upon, the keeping of 200 cows, 100 heifers coming forward for cows, 16 to 18 work horses, the sale annually of 250 tons of hay and 1,000 to 15,000 bushels of potatoes. This involves the annual production of the equivalent of 1,100 to 1,300 tons of hay and partial pasture for 300 head of stock.

The pasture is confined to the 50 acres in rotation, 100 acres that cannot be plowed (this will be treated to chemical manures) and the distant pasture for the young things and cows when dry. The cows are grazed save in June at pasture and fed from the silos and hay mow for part ration. By this system the pastures will be under constant improvement.

I have covered in general your several inquiries in as short a compass as possible. Should there be details in which you or the readers are interested, I shall be pleased for old associations sake to clear the matter up. J. W. SANBORN, Gilmanston, N. H.

CEDAR HILL JERSEY FARM NOTES.

Editor RURAL WORLD: At home again at the Cedar Hill Jersey Farm, the grand old Missouri. Such corn fields, such hay crops, such fine pastures and consequently such fine conditioned stock as I saw everywhere; it made me feel it was good to be a Missourian myself, especially as I saw the corn crop safe from frost, and the corn in my locality Illinois lacked some time from being free from danger. But while I saw the immense corn crop, I also saw what a great waste of fine feed there would be in the stalks that will be allowed to die upon the ground. I could not help speculating on the possibilities of an acre of Missouri corn properly handled, if cut and well shocked, then passed through a shredder. Every acre of corn in Missouri would yield as much food value as an acre of timothy hay, and if placed in a silo the food content of an acre would feed a two-year-old steer from 20 to 30 months, and at the same time he would thrive much better than if fed in any other way. I gave this subject special attention in the institute meetings, and I trust it may cause the Missouri stockmen to awake to their losses in their corn fields.

I found the prevailing idea was that the silo was for the dairyman only; that it was a mistake. The all-round farmer or stockman may derive as much value from silage as can the dairyman. Any farmer or stock breeder or feeder will double both the feeding and cash value of his corn crop by putting it in his silo. Just water for a moment what he is saving in labor. First, it saves husking; second, it saves shelling; third, saves grinding; fourth, saves cooking or soaking, and last it saves a great amount of hard, disagreeable work hauling the shocked fodder in a bad spell of weather and saves a large amount of food value that otherwise would be lost from exposure to weather in shocks, but best of all savings is that of keeping the corn plant in its green, juicy condition, so much relished by all kinds of farm stock. This property is a great factor in promoting the health of our stock.

"BUFF JERSEY."

The 1902 cranberry crop of the United States is estimated to amount to 725,000 bushels, against 1,040,000 in 1901.

NEWS AND COMMENT.

But little damage has been done in Missouri by frost and reports seem to indicate no serious loss in other states.

There are two hundred and fifty schools in Nebraska without teachers. The pay offered is \$30 a month and "find yourself."

F. W. Taylor, Chief of the Department of Agriculture, St. Louis World's Fair, is in attendance on the State Fair at Pueblo, Colorado, in the interest of the Exposition.

Don't forget the farmers' institutes in the rush of fall work. Only by enthusiastic attendance can farmers get the benefit offered by the State Board of Agriculture in these institute meetings.

President Roosevelt has just started on a long trip through the west. He will travel more than 6,000 miles, and begins under auspicious circumstances what promises to be a memorable presidential tour.

From the report of the Twelfth Census we see that in 1900 there were nearly 202,000,000 bearing apple trees in the United States, of which New York had 15,000,000, yielding 24,000,000 bushels, and Missouri showed 20,000,000, with a total yield of 4,000,000 bushels.

There is reported a horse and mule famine in St. Louis, owing to extensive work done on the World's Fair grounds and increased fall activity in general trade. Teamsters are being paid \$4.00 and \$5.00 a day, while only six months ago the average price was \$2.50.

The Hungarian Minister of Agriculture issued on September 4 his annual estimate of the grain crops of the world for 1902. The figures are approximately as follows: Wheat, 2,500,000,000 bushels; oats, 3,000,000,000 bushels; corn, 3,270,000,000 bushels; rye, 1,575,000,000 bushels.

Prominent cattle commission men at Union Stock Yards in Chicago are planning a big banking concern in close connection with their business than any heretofore. With this news comes the report of a \$50,000,000 cattle combine among the commission men.

Secretary Shaw is not worrying over the Wall Street alarmist reports of a scarcity of money. He says the south and west are abundantly able to take care of their local demands this year, and believes that, with the release of \$14,000,000 by the Treasury Department, every demand will be met.

The bank deposits of the people of the United States aggregate eight and a half billion dollars, an average of \$108 per capita. Ten years ago they aggregated \$2,250,000,000, or just half the amount of to-day, and twenty years ago they were \$2,600,000,000, or a little more than one-quarter of those of to-day.

"Tis an ill wind that blows nobody good," and it is an ill wind that is blowing great clouds of black smoke along the Pacific coast where tremendous forest fires are raging, and fanning into flames the finest timbered region of the United States. In Oregon and Washington settlements have been wiped out and a number of lives lost, besides the immense loss of standing timber.

The ten-year average of Missouri's corn condition on September 1st is 80. In 1900 it was 84. Just one year ago it was 79, and on Sept. 1, 1902, it was 102. The ten-year average for the United States on Sept. 1st was 75. Missouri almost touched low water mark in 1901, only one state, Kansas, showing corn more severely affected by the drought, with condition of 18. This year Missouri leads, only one other state, Nebraska, 101, registering corn condition above the hundred mark.

We are pleased to present to RURAL WORLD readers this week the likeness of Prof. J. W. Sanborn together with an article written by him outlining some of the work done in reclaiming and rehabilitating a large New England farm. Prof. Sanborn is well known in the west, having been associated closely with educational work in the Missouri Agricultural College and as secretary of the Missouri State Board of Agriculture. If persistent and scientific effort, as exemplified in Prof. Sanborn's treatment of a forbidding and inhospitable soil has made Wilson Farm blossom like an oasis amid New Hampshire granite hills, what may not be prophesied by applying the same patient and intelligent methods to some of the rich rolling prairies of the west?

Last Saturday from Mr. C. D. Lyon, our popular Hignapton, O., correspondent, who has just finished his work with the corps of Missouri Farm Institute lecturers, and goes from here to superintend urgent work on the famous "Ohio farm." Mr. Lyon expects to devote considerable of his spare time this fall and winter in institute work in Ohio and adjoining states. He will also resume his correspondence for the RURAL WORLD within a short time, and readers may be sure of hearing something new from Brother C. D., told in his fresh and vigorous style. While Mr. Lyon was in the office, our old reliable Dairy correspondent, M. E. King, from Labette County, Kansas, came in, accompanied by his brother. We enjoyed a very pleasant talk on subjects of mutual interest and bade farewell with regret.

Horticulture

HORTICULTURAL TALK.

CORRECTION.—In the issue of Sept. 16 under "mulberries," moist land should read waste land.

A GOOD EXAMPLE.—The September exhibition meeting of the Alton Horticultural Society was held Sept. 13, at Jerseyville, and the exhibit of apples there was a good demonstration of the value of spraying.

Among the exhibitors were W. E. Carroll, Dr. A. K. Van Horn, I. D. Snedeker of Jerseyville and Mr. Pitt of Greene county.

The fruit exhibited by these parties was absolutely perfect, with not a blemish to be found, either from insect or fungi. How did they do it? They sprayed. But that does not tell it all. Often have I heard parties say that they have sprayed, and their neighbors did not, yet had just as good a crop as they. The men who produced the fine apples were thorough; used the best pump, to which was attached the best nozzle. The mist-like spray was sent to every part of the tree, covering both sides of every leaf. This was done without any special care, but with a prepared mixture and repeated often.

Now for the man who regards spraying as an unnecessary expenditure, which indeed it is for him the way he does it. He buys the cheapest outfit he can find, perhaps one of those little hand concerns, with which he sprays all his trees, some of them forty years old, but standing in the high-priced ones, and having no good reason to doubt the man's word, he bites, and of course gets a nose bite himself.

Then there are others who never are thorough in anything they attempt to do. Give them the best sprayer you can find, and they would fail in the result. In the first place they would not prepare the mixture accurately. Finding the job rather disagreeable, they would decide to get through as quickly as possible, guessing that it will do any way, so long as most of the trees are covered. When the next time for spraying comes, they are not cultivating will be regarded as more important, and the nasty job will be deferred until too late, or altogether. I have even seen men get out of patience because the nozzle choked up occasionally; take off the nozzle, spread the stream with their fingers and spray the trees. The kind of men who tell how they sprayed until the trees fairly dripped, and yet their neighbors had just as good apples.

The time has come when to grow good apples we must spray, and do it thoroughly. Those who do not intend to do this should let their neighbors do it for them.

At the above mentioned meeting there was also a very fine collection of grapes from H. G. McPike of Alton. His list of varieties was very large. His new grape, "McPike," was even more perfect than usual, and attracted much attention. Mr. James Davis of Godfrey had a valuable showing of pears, also some fine grapes. Several others had very creditable offerings, which made the exhibit the best that had been seen by any one present.

EDWIN H. RIEHL.
Rural Alton, Ill., Sept. 15, 1902.

EDITOR RURAL WORLD: I send you this worm. I found it on one of my apple trees. I never saw one like it before. Would like to know whether it is injurious to orchards or not. It has two horns; they come out of its lip when I would touch it. It would try to fight by throwing its head back and throwing its horns out. Please answer through the RURAL WORLD. W. F. GRAGG, Montrose, Mo.

The worm described is the larval stage of a poplar butterfly. There is no danger of these ever becoming numerous enough to injure apple trees to any extent. They are readily killed by an arsenical spray.—EJ.

QUAKER MARVEL BEANS.

Will those who received Quaker Marvel beans from us report in next columns of COLMAN'S RURAL WORLD of their success or failure with these wonderful, productive beans?


Peoria, Ill. MRS. L. HARRISON.
GARDENING IN ALASKA.

Probably the first experimental gardening in Alaska, north of the Arctic Circle, was done by the International Polar Expedition to Point Barrow, Alaska, 1881-1882, which was organized for the purpose of co-operating in the work of circumpolar observation proposed by the International Polar Conference. The main object of the expedition was the prosecution of observations in terrestrial magnetism and meteorology. Experimental gardening was an elective investigation.

The Arctic night at Point Barrow, which is of 79 days duration, ends at noon, on Jan. 23, when the upper edge of the sun's disk appears above the southern horizon. The next day the entire disk is visible. Each succeeding day the sun rises a little earlier and a little more to the east of south, and sets a little later and a little more to the west of south, and finally, when the day and night are of equal length, it rises directly in the east and sets in the west. The day continues to lengthen and the night to shorten until the middle of May, when the midnight sun appears above the northern horizon and the long Arctic day begins. The sun then remains above the horizon both day and night for 70 days, or until July 24, when it dips its lower disk at midnight below the northern horizon, and night and day again begin. But at no time are the sun's rays at Point Barrow vertical. The maximum altitude is 42 degrees 32 minutes, which occurs at noon on June 22.

The snow does not begin to melt until after the sun remains continuously above the horizon and does not disappear before July, but the land close to the coast is practically free from snow by the 15th of June. The snow fall is very light, the depth on the land along the coast at no time exceeding 15 or 18 inches. The total annual precipitation—rainfall or melted snow—is only 8 inches.

A level treeless area (tundra) occupies the entire Point Barrow region. The subsoil, principally sand and gravel, perpetually frozen, is covered on the tundra generally by a light, clayey soil, and at spots near the coast by a dark, loam-like soil, which thaws to a depth of from



Thirty-five bushels of wheat contain thirty pounds of Potash

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GERMAN KALI WORKS
93 Nassau St. New York

3 to 9 inches. Upon the latter soil, within 20 yards of the ocean water line, the gardening was done. This soil had been enriched somewhat by refuse from Eskimo houses, and the most carefully prepared mixture and repeated often.

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age is stamped with the name and address of the shipper and gives a guarantee to the buyer, and an additional advertisement to the seller. In some localities a profitable branch of the industry is the manufacture of cider into jelly by rapidly boiling it down as soon as it leaves the press. The jelly retails at from 50 to 75 cents per gallon, according to the quality, that from sweet apples being greatly preferred. A local manufacturer worked up a good trade in a neighboring city by preparing a quantity in small glasses. These the city grocer gave to his customers for trial, and so satisfactory was the result that ready sale was at once found for all he could furnish.

There are always culls which fall in the cider apples class, and while cider as a beverage is not desirable, cider vinegar is acknowledged to be of superior quality. Let any man's reputation become established for furnishing the pure, unadulterated article, and he will find ready sale for it, unless, as in some states, legislation has been so carefully done that pure cider vinegar cannot reach the acid state. It is pleasing to note that the inconsistency of this has been noted by Pennsylvania's legislature in the last session. In former days the pigs got the surplus or "magars" because it was cheaper than to let the fallen fruit go to waste. "Cows would choke on the apples," and the "fruit would lessen the flow of milk," according to popular verdict. Experience shows an increased milk flow, and farmers find that cattle now seldom choke on apples, unless two or more are crowding for the same bite. When put into their mangers, this danger is avoided.

GRAPE JUICE FOR THE MARKET.

It has long been a source of wonder to me why grape-growers do not make more of an effort to supply the demand that exists for the unfermented juice of the grape. For years past many grapes have been sold in our city markets at prices that must mean small returns to the producer. I have frequently bought a 5-pound basket of choice Concord or Niagara in the retail market of New York for a single dime, and have bought a 10-pound basket for 15 cents. After deducting the retailer's profit, the charges of the commission merchant and transportation, the cost of baskets, packing and carting, besides the other incidental but no less certain expenses of placing upon the market, how much is left of this munificent price for the producer? It would seem the part of wisdom for the growers and shippers to seek some other outlet for a considerable portion of the surplus crop. The grapes turned into other channels, enough better prices might be secured for the remainder to amply compensate for the increased labor and expense.

Many writers and lecturers on health topics strongly recommend grape juice as a healthful and refreshing beverage. It is sold everywhere, but where obtainable at all its price seems almost, if not quite, prohibitive. I know of one or two companies which make and advertise it, but their prices are such as to put its use in any quantity out of the question for the mass of people, who the juice may be. Perhaps it can be manufactured and put on the market at any lower price, but at prices at which many grapes are sold in the season, it certainly seems as though it might. Some city dealers carry it in stock, but their prices are also high. I have seen places where the grapes were squeezed in a press before the customers' eyes and the juice served direct, but the price was the same as that for which one could often buy a whole basket of grapes, and the glass was a very small affair at that. What we want is the pure article, put on the market at such a price that the mass of people can buy it, thus benefiting themselves. At the same time the grape growers would get a benefit, for I verily believe if half the grapes that are now sent to the city markets were worked up in this way, the growers would realize nearly as much money for the remainder as they now do for the whole.

No elaborate machinery or process of manufacture would be required. All that is necessary to prepare the product is to squeeze out the juice, heat it to the boiling point, or possibly not quite to that point, and seal it tightly. Marketing might, at first, be a little more difficult for the small grower, but in time he would find that the grapes were common in the markets. Then it will be handled through the regular channels of trade. Meanwhile, co-operation in advertising and selling it would solve the problem for the growers. The attention of great numbers of people has been drawn to the desirability of pure grape juice as an article of food; the demand exists. Will the grape growers help to supply it, and at the same time benefit themselves financially?—F. H. V.

SWEET CIDER.

Sweet cider made of good, sound apples properly fined, is one of the most wholesome of drinks. It is difficult to get it. There are places where "pure apple cider" is advertised, but when you get a glass you drink a concoction of brown sugar, tartaric acid, yeast, water and some apple cider.

Whenever root grafting is used in the winter the plants should not be set out in the spring unless the grafts have grown together.

Thrifty young trees are more apt to live than the larger ones. Their roots are smaller and more apt to be all taken up in transplanting.

It is a good deal more trouble to set trees in a straight row than in a crooked one, but they look better and are more easily cultivated.

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ple cider. The usual city grocery price for apple cider is twenty-five cents a gallon year in and year out. Some years, when apples are plentiful, it is possible, by trying many samples, to get good cider, but when apples are at all scarce the 25-cent cider is pretty weak, sour and poor. Hard cider is not to be recommended. This is the point where the juice pastes from the vinous fermentation, caused by the sugar in the apple, to the formation of acetic acid. In this stage alcohol is developed, and the product is really neither cider nor vinegar. The liberal use of good cider is said to be a most effective preventive of malaria, and the drink is a specific for dysentery. Cider is best made from apples not only sound but ripe. Early windfalls, but only good, ripe, selected apples make first-class cider. There is all the difference in the world between cider made from this class of fruit and that made from all sorts—good apples, windfalls, half-rotten apples and rotten apples.

TOPS OF TREES.

For many years there has been a desire to remove the tops of trees in the direction some years ago when rows were closer together than they are now placed, and difficulty was experienced in getting through between the trees with teams for gathering the fruit and also for hauling fertilizers on the roads. For some years, then, the tendency was to "higher" tops to overcome this objection. In more recent years, however, the tops have been coming down until in some localities the branches of the trees almost lie on the ground. There are some things in favor of the tops, but there are localities where without the aid of large ladders, there will be no grass or weeds growing under the trees, and high winds will not have as much effect on trees of this kind as on tall ones.

We do not recommend the practice of topping the trees as a general adoption, but there are localities where it would be a decided advantage to have the tops very low. This is a matter of fancy with orchardists who know the conditions and will be governed by them.

TREE 154 FEET IN CIRCUMFERENCE.

What is undoubtedly the largest known tree in the world has been discovered two and a half miles from the Sanger Lumber company's mill at Converse Basin, far up in the Sierras, in California. The discovery was made by a party of lumbermen, but the tree was not described in this column of the forest was exaggerated. But it has since been visited by persons who have verified the finders' statement. The tree was measured six feet from the ground, and it took a line 154 feet and 8 inches long to encircle it, but it was about 10 feet in diameter. This tree is a few rods from the company's boundary line and is on the government reserve, hence will stand to interest sightseers.

GERMAN ORCHARDS.—The result of the census of fruit trees in the German Empire, undertaken for the first time in 1900, have just been published. The total number of apple, pear, plum and cherry trees, standard and dwarf, regardless of size and bearing capacity, exclusive of those in nurseries, was 188,469,900, 18 per cent being apples, 13 per cent pears, 41 per cent plums and 13 per cent cherries. Per square kilometer (about 247 acres) there were on an average 311 fruit trees—128 plums, 97 apples, 46 pears and 30 cherries, or 3 fruit trees per head of population. Despite this very creditable showing, Germany is unable to supply the home demand and in order to do so a well-known statistician estimates 15,000,000 more fruit trees are necessary. In a late commercial report I notice that the importation of fresh and dried or evaporated fruits of the four sorts above mentioned, in 1900 amounted to 26,300,000 marks, and in 1901 to 29,400,000 marks.—R. M. Singen, Baden.

Many unoccupied fence corners might be growing trees if set there. In a few years they would be a source of beauty and comfort.

When cultivating an orchard, care should be taken not to plant a crop that requires too deep cultivation or too deep digging to harvest it.

A large orchard poorly planted and poorly tended will not produce as good results as fewer trees well cultivated.

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The Apilary

FALL BEE WORK.

EDITOR RURAL WORLD: All those who have colonies of bees should examine them now to see if they have sufficient stores to last until honey comes another season. Some bee-keepers have reported that they expect to have to feed a colony two or three times to keep them from starvation. Old colonies that have not swarmed or stored in sections may have sufficient stores, but swarms may not. Since writing the above I laid down my pen and went out into the apiary and lifted hives, and I don't believe that there is a colony that has stores to last until flowers bloom.

To-day is September 17, and showery. There is abundant bloom and two days previous were warm and balmy, yet the bees brought in neither pollen nor honey. During the cool spell I put honey in the second story of the swarm, and thought they knew it was there they did not carry it below. When the weather moderated they carried it down, and then I put on a pan of syrup in this way: I stir granulated sugar and water together until it is of the consistency of thin honey. This can be fed in any vessel by tying cheese cloth loosely over it, so that it will fall on its surface as fast as it is removed.

In most localities if bees are not fed immediately there will be a lot of bees that do not wait until spring to feed, but do it now. Feeding in spring excites the bees, and they go after water, and never return. To prevent spring drifting, hives should be kept as quiet as possible until the weather is warm.

Peoria, Ill. MRS. L. HARRISON.

AUTUMN MANAGEMENT OF BEES.

Considerable work is necessary to do with bees in autumn if they have them in the proper shape to go into the winter in good condition, says "Kansas Farmer." The most of this work is better done early in autumn, for it can not be done so near as good advantage later. September is the best time to do it, and all feeding, and arranging the colonies in good condition, can only be done at this time.

Feeding of colonies that do not have enough honey to winter on should be done now, from the fact that the bees will seal up the honey, which they will not do later, and colonies that are fed now will breed a lot of young bees, which is the life of the same during winter. Fall bred bees are worth much more than those bred in summer, and a colony that is thus fed early, will produce enough young bees to insure its wintering well and coming strong in spring. Feeding is best done regularly every day during the month of September, as by this prolonged method, the queen will continue to lay eggs, and a fine lot of brood will be the result. While it may take a little more feed to do this, yet it pays well to do it.

It is so seldom that we get any surplus honey in autumn, that it is best to take off all supers, and allow the bees to store all they get in autumn, in the brood chamber for their own use. A flow of honey in autumn will enable the bees to winter, and colonies will always winter better, but it is seldom that we get such a good flow in autumn, that we usually go into winter quarters with old bees bred in summer. Bees will not breed if fed late in autumn, unless the weather is unusually warm, but even then it is not good for a colony to go into cold weather with too much brood in the combs, for such colonies require frequent flights.

It is not good policy to move hives of bees in autumn short distances, and many frequently do this, thinking that the bees will return to the old location, and enter the wrong hive, or if no other colonies are near, they will not find the way to the hive, except it be moved but a foot or so at a time each day they are flying, when they may thus be made to follow the hive.

We can very easily reduce the strength or numbers of bees in a colony by this moving them, when no worse time can be found than just before winter for doing it, on account of crippling the colony by weakening it down. Twice in the year we should be very careful about losing any bees by careless handling, and that is in late autumn and early spring. It will do no hurt to move bees long distances, for they will not then return, but in many cases even in the

RAISING FALL PIGS.

POLAND-CHINAS.

Blue Belle 388 42834 by Stampy King by King Le
Also pigs, both sexes, out of such sows as King
cote Belle 42857, Ideal Belle 52976 and Hayter Le
XV. 81330. Come and see or address
A. I. MOSS,
R. F. D. 2, Mt. Vernon, Ill.

come almost of no value as breeders. An exchange says that disappointments com-

As a rule it is not profitable to care for a sow for two or three months that she may be bred to produce pigs at a given time to meet favorable weather conditions. The feed expended will pay for a

ALFALFA IN OKLAHOMA.

At 6 to 8 weeks old wean them from the mothers, and in from 4 to 4½ months

could give profitable employment to at all times, and when his motor was not a

Whenever a check of growth occurs the animal must necessarily be stunted in degree.


FINISHING OLD EWES

Delaine ewe makes a flock of this kind valuable for the man who wants to make

a man has made money on sheep out having had previous experience them. A careful and painstaking man required to keep sheep. They will

Prize winning Berkshires and Shorthorn Cattle—young stock—for sale at all times. Address **HARRIS & McMAHAN, Lamine, Mo.**

Of the best families at farmers' prices. Write for what you want, or, what is better, come and inspect the stock.
W. H. KER, Prairie du Rocher, Ill.



PLYMOUTH FARM CHESTER WHITES FOR SALE.—Pedigree spring pigs of either sex; pairs and trios not skin, representing best blood line of the breed. Satisfaction guaranteed. Can ship over C. B. & K. C. or C. M. & P. Ry. Correspondence and inspection invited. When writing describe build of pig wanted. (Farm located one mile from Farmington and two miles from Missouri line.)

B. M. BOYER,
Farmington, Van Buren Co., Iowa.

A STRICTLY MODERN TRAIN WITH THROUGH CARS
ST. LOUIS, CHICAGO AND KANSAS CITY
 TO
**AUSTIN, HOUSTON, GALVESTON,
 SAN ANTONIO and MEXICO CITY.**

THE FARMER AND THE SHEEP.

One who has had a few sheep for several years increased his flock last fall to 100 brood ewes. We sold him a five-year-old sire of strong prepotency and of large

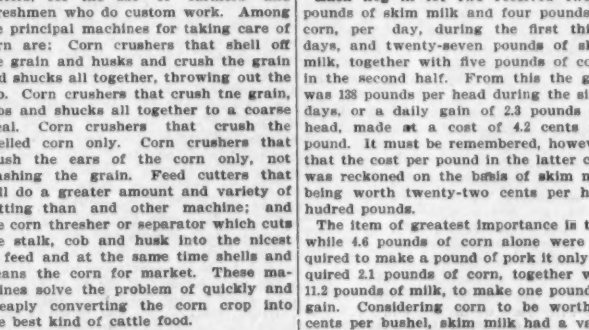
G. H. MILLER,

an excess with some kinds of food. To some food can be fed plentifully to bring ewes with good results, while another kind must be given moderately.

an excess with some kinds of food. To some food can be fed plentifully to bring ewes with good results, while another kind must be given moderately.



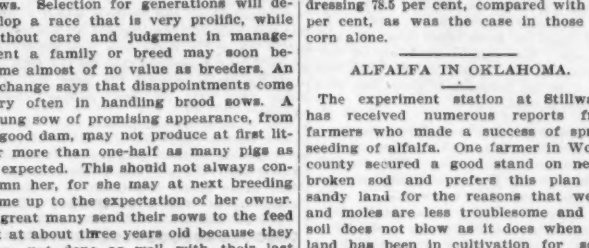
poses. The accompanying cut gives a
w of one of their feed and ensilage
aters for the use of farmers and



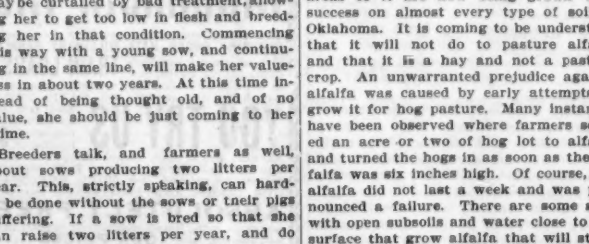
PRODUCTIVE CAPACITY OF THE
BROOD SOW.

—

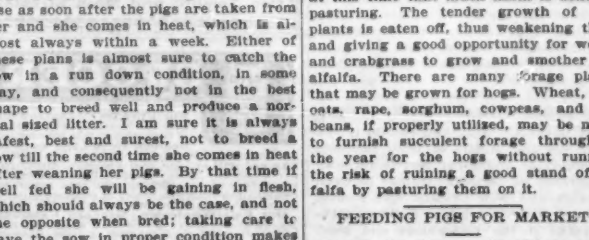
This varies very much with different



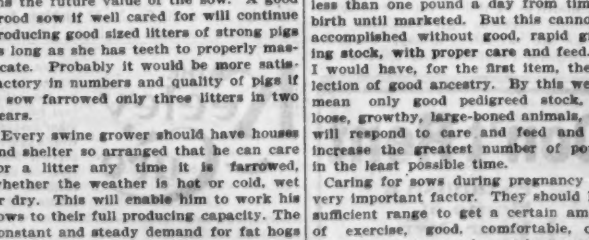
ter of pigs, as they thought they could, yet the trouble may not lie with the sow; more often it does not, but with the owner. A sow's productive capacity



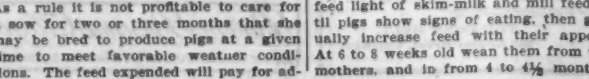
her pigs must be weaned too young to do their best. Or if the pigs are allowed to suck till 8 to 10 weeks old the sow must be bred before the pigs are weaned if she can be brought in heat, or at this time that much harm is done.



Overcrowding curtails the number and quality of pigs produced and also weak-



arm. It is always more desirable to have the lots of fat animals all about even in size, but this is hard to accomplish and have all sows steadily at work.



elon department. This property comprised about four car loads, none of which were very choice. The market opened very quiet. There were no buyers from any quarter except to be found around the barns, the dealers did little or nothing during the forenoon, and a feeling of comparative dullness dominated the trade. The effect was felt in the market for fresh arrivals, few of the dealers being desirous of looking at the new arrivals until the exterior demand would show signs of bracing up, particularly as the bulk of the offerings were very medium. Consequently there were few sales of any class reported, and the situation embraced a nominal aspect.

too wet for plowing and seeding, but elsewhere that work has generally progressed



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